

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 15 APR 2005

WIPO

PCT

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To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/B2005/050012

International filing date (day/month/year)
04.01.2005

Priority date (day/month/year)
06.01.2004

International Patent Classification (IPC) or both national classification and IPC
G10L19/02

Applicant
KONINKLIJKE PHILIPS ELECTRONICS, N.V.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and Industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Authorized Officer

Blaas, D-L

Telephone No. +31 70 340-3244



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/050012

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/050012

Box No. V Reasoned statement under Rule 43b/s.1(a)(I) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|------|
| Novelty (N) | Yes: Claims | 1-20 |
| | No: Claims | |
| Inventive step (IS) | Yes: Claims | 1-20 |
| | No: Claims | |
| Industrial applicability (IA) | Yes: Claims | 1-20 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

- 1 Reference is made to the following document/s/:
D1: DE-A1-198 32 472 (Robert Bosch GmbH) 27th January 2000 (2000-01-27)
D2: EP-A2-1 170 727 (NEC Corporation) 9th January 2002 (2002-01-09)
D3: EP-A-0 554 962 (NOVANEX AUTOMATION N.V) 11 August 1993 (1993-08-11)

- 2 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document):

A method for automatically equalizing an audio signal (22, 28), the method comprising:
measuring spectral energy values (52) for a plurality of frequency bands;
determining spreaded energy values (12, 14) for each frequency band based on the measured spectral energy values and
a spreading function (46, 42), the spreading function defining a spread of spectral energy across frequency bands; and
updating equalizer settings for each frequency band based on the measured spectral energy values and the spreaded spectral energy values.

Although claim 1 could be read in this sense onto D1, it is clear from the description that the terms "spreaded energy value", "spreading function", and "measured energy value" do have a particular meaning in the context of the present application. These features are determined on page 6, lines 1 to 10. Therefore it is considered that claim 1 is new (Article 33(2) PCT).

The subject-matter of claim 1 differs from this known D1 in that the audio enhancement is done essentially on the acoustics in the room and not on the signal source of the audio signal. The problem to be solved in this context would be how to further enhance the audio signal itself independent of the surrounding room.

The solution to this problem proposed in claim 1 of the present application is

considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

No document in the found prior art discloses to enhance the audio signal by using psycho acoustic findings and creating special spreading functions to detect a masking energy and to enhance masked energy portions of the audio signal.

Claims 2 - 9 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

- 3 The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claims 10 and 19, and equally to the dependent claims 11 - 18 and 20, which therefore are also considered new and inventive.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

| | | |
|--|--|--|
| Applicant's or agent's file reference PHUS040009WO | FOR FURTHER ACTION | See item 4 below |
| International application No. PCT/IB2005/050012 | International filing date (<i>day/month/year</i>) 04 January 2005 (04.01.2005) | Priority date (<i>day/month/year</i>) 06 January 2004 (06.01.2004) |
| International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237 | | |
| Applicant KONINKLIJKE PHILIPS ELECTRONICS, N.V. | | |

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

| | |
|---|---|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70 | Date of issuance of this report 10 July 2006 (10.07.2006) Authorized officer <div style="text-align: center; font-size: 1.2em;">Cecile Chatel</div> e-mail: pt13@wipo.int |
|---|---|

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Authorized Officer

Blaas, D-L

Telephone No. +31 70 340-3244



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INTERNATIONAL SEARCHING AUTHORITY**

International application No.
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Box No. I Basis of the opinion

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4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/050012

Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|------|
| Novelty (N) | Yes: Claims | 1-20 |
| | No: Claims | |
| Inventive step (IS) | Yes: Claims | 1-20 |
| | No: Claims | |
| Industrial applicability (IA) | Yes: Claims | 1-20 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

Re Item V

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- 2 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document):

A method for automatically equalizing an audio signal (22, 28), the method comprising:

measuring spectral energy values (52) for a plurality of frequency bands;
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a spreading function (46, 42), the spreading function defining a spread of spectral energy across frequency bands; and
updating equalizer settings for each frequency band based on the measured spectral energy values and the spreaded spectral energy values.

Although claim 1 could be read in this sense onto D1, it is clear from the description that the terms "spreaded energy value", "spreading function", and "measured energy value" do have a particular meaning in the context of the present application. These features are determined on page 6, lines 1 to 10. Therefore it is considered that claim 1 is new (Article 33(2) PCT).

The subject-matter of claim 1 differs from this known D1 in that the audio enhancement is done essentially on the acoustics in the room and not on the signal source of the audio signal. The problem to be solved in this context would be how to further enhance the audio signal itself independent of the surrounding room.

The solution to this problem proposed in claim 1 of the present application is

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No document in the found prior art discloses to enhance the audio signal by using psycho acoustic findings and creating special spreading functions to detect a masking energy and to enhance masked energy portions of the audio signal.

Claims 2 - 9 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

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4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/050012

Box No. V Reasoned statement under Rule 43bis.1(a)(I) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|------|
| Novelty (N) | Yes: Claims | 1-20 |
| | No: Claims | |
| Inventive step (IS) | Yes: Claims | 1-20 |
| | No: Claims | |
| Industrial applicability (IA) | Yes: Claims | 1-20 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
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